

$$\underline{a} = \begin{pmatrix} 5 \\ -1 \end{pmatrix}$$

$$\underline{b} = \begin{pmatrix} -3 \\ -10 \end{pmatrix}$$

$$\begin{array}{l} \underline{a} \cdot \underline{b} = 5 \times -3 + -1 \times -10 \\ = -5 \end{array}$$

a) What is $\underline{a} \cdot \underline{b}$?

b) What is the angle between \underline{a} and \underline{b} ?

$$\underline{a} \cdot \underline{b} = |\underline{a}| |\underline{b}| \cos \Theta$$

$$-5 = \sqrt{26} \sqrt{109} \cos \Theta$$

$$\Theta = \cos^{-1} \frac{-5}{\sqrt{26} \sqrt{109}} = 95^\circ \text{ (nearest } 1^\circ)$$